

CLAIMS

1. An objective lens drive device comprising:

an objective lens through which laser light is transmitted onto a recording
5 surface of a disk-shaped recording medium to read and play information recorded on the
disk-shaped recording medium;

magnets;

a base including:

a support shaft that protrudes toward an optical axis direction of the
10 objective lens; and

at least a pair of magnet attachment parts to which the magnets are
attached; and

a movable unit including:

a holder part that holds the objective lens;

a supported part by which the movable unit is supported on the support
15 shaft rotatably about and slidably along the support shaft;

a focusing coil to which a driving electric current is supplied during a
focusing adjustment of the laser light;

a tracking coil to which a driving electric current is supplied during a
20 tracking adjustment of the laser light; and

a magnetic member formed in a linear shape for holding the movable
unit in a neutral position in a focusing direction and in a tracking direction by being
attracted to the magnets.

25 2. The objective lens drive device according to claim 1, wherein said magnetic member
includes:

a base part;

a pair of spring parts connected to two ends of the base part and being elastically brought into contact with two side surface parts of the movable units respectively;

a pair of supported parts connected respectively to the pair of spring parts and supported respectively on two side surface parts of the movable unit; and

5 a pair of magnet-facing parts connected respectively to the pair of supported parts and arranged so as to face the magnets.

3. The objective lens drive device according to claim 1, wherein said magnetic member is arranged so that the movable unit is subjected at all times to rotational torque in an
10 orientation that tilts the movable unit toward one direction with respect to the support shaft.

4. The objective lens drive device according to claim 1, wherein said magnets are single-pole magnetized.

15 5. The objective lens drive device according to claim 1, wherein said movable unit having a pair of said magnetic members arranged on opposite sides of the support shaft positioned therebetween.

20 6. A disk device comprising:

a disk table on which a disk-shaped recording medium is mounted;

a drive motor for rotating the disk-shaped recording medium;

an objective lens through which laser light is transmitted onto a recording surface of the disk-shaped recording medium to read and play information recorded on
25 the disk-shaped recording medium; and

an objective lens drive device holding the objective lens, said objective lens drive device comprises:

magnets;

a base including:

a support shaft that protrudes toward an optical axis direction of the objective lens; and

5 at least a pair of magnet attachment parts to which the magnets are attached; and

a movable unit including:

a holder part that holds the objective lens;

10 a supported part by which the movable unit is supported on the support shaft rotatably about and slidably along the support shaft;

a focusing coil to which a driving electric current is supplied during a focusing adjustment of the laser light;

a tracking coil to which a driving electric current is supplied during a tracking adjustment of the laser light; and

15 a magnetic member formed in a linear shape for holding the movable unit in a neutral position in a focusing direction and in a tracking direction by being attracted to the magnets.

7. The disk device according to claim 6, wherein said magnetic member includes:

20 a base part;

a pair of spring parts connected to two ends of the base part and being elastically brought into contact with two side surface parts of the movable units respectively;

a pair of supported parts connected respectively to the pair of spring parts and supported respectively on two side surface parts of the movable unit; and

25 a pair of magnet-facing parts connected respectively to the pair of supported parts and arranged so as to face the magnets.

8. The disk device according to claim 6, wherein said magnetic member is arranged so that the movable unit is subjected at all times to rotational torque in an orientation that tilts the movable unit toward one direction with respect to the support shaft.

5 9. The disk device according to claim 6, wherein said magnets are single-pole magnetized.

10 10. The disk device according to claim 6, wherein said movable unit having a pair of said magnetic members arranged on opposite sides of the support shaft positioned therebetween.

11. A disk device for at least one of recording information on and reading information from a disk-shaped recording medium by using laser light, said disk device comprising:

15 an objective lens through which the laser light is transmitted onto the disk-shaped recording medium;

a movable unit that holds the objective lens; and

a base that supports the movable unit, wherein

said base including:

20 a support shaft provided along an optical axis direction of the objective lens for supporting the movable unit; and

magnets, and

said movable unit including:

25 a supported part supported on the support shaft rotatably about the support shaft and slidably along the support shaft;

a first coil that generates a magnetic field for causing the movable unit to rotate in a rotational direction about the support shaft;

a second coil that generates a magnetic field for causing the movable

unit to move in an axial direction slidably along the support shaft; and

a magnetic member generating a repelling force when deformed and being attached to said movable unit by means of said repelling force,

wherein said movable unit is held in a neutral position in the rotational direction
5 if driving electric current is not supplied to the first coil and held in a neutral position in the axial direction if driving electric current is not supplied to the second coil by a force by which said magnetic member is attracted to the magnets.

12. The disk device according to claim 11, wherein said magnetic member is formed in
10 linear shape.

13. The disk device according to claim 11, wherein
said base has a pair of said magnets arranged in positions that are symmetrical about a centerline of the support shaft, and
15 said magnetic member is asymmetrical with respect to a plane that is perpendicular to the support shaft and is symmetrical with respect to a plane of symmetry of the pair of magnets.

14. The disk device according to claim 11, wherein
20 said movable unit has a pair of said magnetic members, and said pair of magnetic members are arranged with support shaft positioned therebetween.

15. The disk device according to claim 11, wherein said magnetic member is an elastic
25 one.